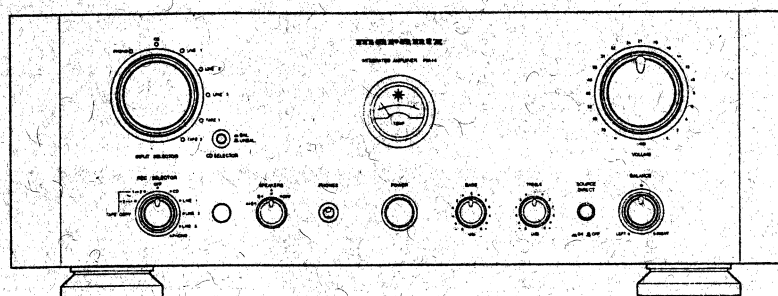


# Service Manual

74 PM14 /02B/02G

PM-14F N

Integrated amplifier



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Please use this service manual with refer  
修理の際は、必ず取扱説明書を準備し操作方

user guide ( D.F.U. ) without fail.  
の上作業を行ってください。

# marantz®

## MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, **MARANTZ** company has created the ultimate in stereo sound. Only original **MARANTZ** parts can insure that your **MARANTZ** product will continue to perform to the specifications for which it is famous.

Parts for your **MARANTZ** equipment are generally available to our National Marantz Subsidiary or Agent.

### ORDERING PARTS :

Parts can be ordered either by mail or by Fax. In both cases, the correct part number has to be specified.

The following information must be supplied to eliminate delays in processing your order :

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature : any order form or Fax. must be signed, otherwise such part order will be considered as null and void.

#### USA

**MARANTZ AMERICA, INC.**  
440 MEDINAH ROAD  
ROSELLE, ILLINOIS 60172  
USA  
PHONE : 630 - 307 - 3100  
FAX : 630 - 307 - 2687

#### CANADA

**LENBROOK INDUSTRIES LIMITED**  
633 GRANITE COURT,  
PICKERING, ONTARIO L1W 3K1  
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PHONE : 905 - 831 - 6333  
FAX : 905 - 831 - 6936

#### EUROPE / TRADING

**MARANTZ EUROPE B.V.**  
P.O. BOX 80002  
BUILDING SFF2  
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#### PROFESSIONAL USA

**SUPERSCOPE TECHNOLOGIES, INC.**  
MARANTZ PROFESSIONAL PRODUCTS  
1000 CORPORATE BLVD. SUITE D  
AURORA, ILLINOIS 60504 USA  
PHONE : 630 - 820 - 4800  
FAX : 630 - 820 - 8103

#### PROFESSIONAL CANADA

**TC ELECTRONICS CANADA LTD.**  
540 FIRING AVE.  
BAIE D'URFÉ, QUEBEC H9X 3T2  
CANADA  
PHONE : 514 - 457 - 4044  
FAX : 514 - 457 - 5524

#### KOREA

**MK ENTERPRISES LTD.**  
2F SHINHAN BLDG., 247-17 SEOKYO-DONG  
MAPO-KU, SEOUL  
KOREA  
PHONE : +82 - 2 - 323 - 2155  
FAX : +31 - 2 - 323 - 2154

#### BRAZIL

**MARANTZ BRAZIL**  
CAIXA POSTAL 21462  
CEP 04696-970  
SAO PAULO, SP, BRAZIL  
PHONE : 0800 - 123123 (Discagem Direta Gratuita)  
FAX : +55 11 534 - 8988

#### THAILAND

**MRZ STANDARD CO., LTD.**  
746 - 754 MAHACHAI RD.,  
WANGBURAPAPIROM, PHRANAKORN,  
BANGKOK, 10200 THAILAND  
PHONE : +66 - 2 - 222 - 9181  
FAX : +66 - 2 - 224 - 6795

#### HONG KONG

**FORWARD INTERNATIONAL CORP., LTD.**  
3F, BLOCK-B WO KEE HONG BLDG., 585-609  
CASTLE PEAK RD, KWAI CHUNG, N.T.  
HONG KONG  
PHONE : +852 24942033  
FAX : +852 24101656

#### AUSTRALIA / NEW ZEALAND

**SCAN AUDIO PTY. LTD.**  
52 CROWN STREET, RICHMOND 3121  
VICTORIA  
AUSTRALIA  
PHONE : +61 - 3 - 9429 - 2199  
FAX : +61 - 3 - 9429 - 9309

#### TAIWAN

**PAI-YUNG CO., LTD.**  
6 TH FL NO. 148 SUNG KIANG ROAD,  
TAIPEI, 10429, TAIWAN R.O.C.  
PHONE : +886 (2) 5221304  
FAX : +886 (2) 5630415

#### MALAYSIA

**WO KEE HONG ELECTRONICS SDN. BHD.**  
NO. 102 JALAN SS 21/35, DAMANSARA  
UTAMA, 47400 PETALING JAYA  
SELANGOR DARUL EHSAN,  
MALAYSIA  
PHONE : +60 3 - 7184666  
FAX : +60 3 - 7173828

#### JAPAN Technical

**MARANTZ JAPAN, INC.**  
35-1, 7-CHOME, SAGAMIONO  
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JAPAN 228-8505  
PHONE : +81 427 48 9379  
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東京都渋谷区恵比寿南 1 - 11 - 9

#### SINGAPORE

**FORWARD MARKETING (S) PTE. LTD.**  
23, LORONG 8, TOA PAYOH,  
SINGAPORE 319257.  
PHONE : +65 2583640  
FAX : +65 3564047

### SHOCK, FIRE HAZARD SERVICE TEST :

**CAUTION :** After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins ( with unit NOT connected to AC mains and its Power switch ON ), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard NO. 1492.

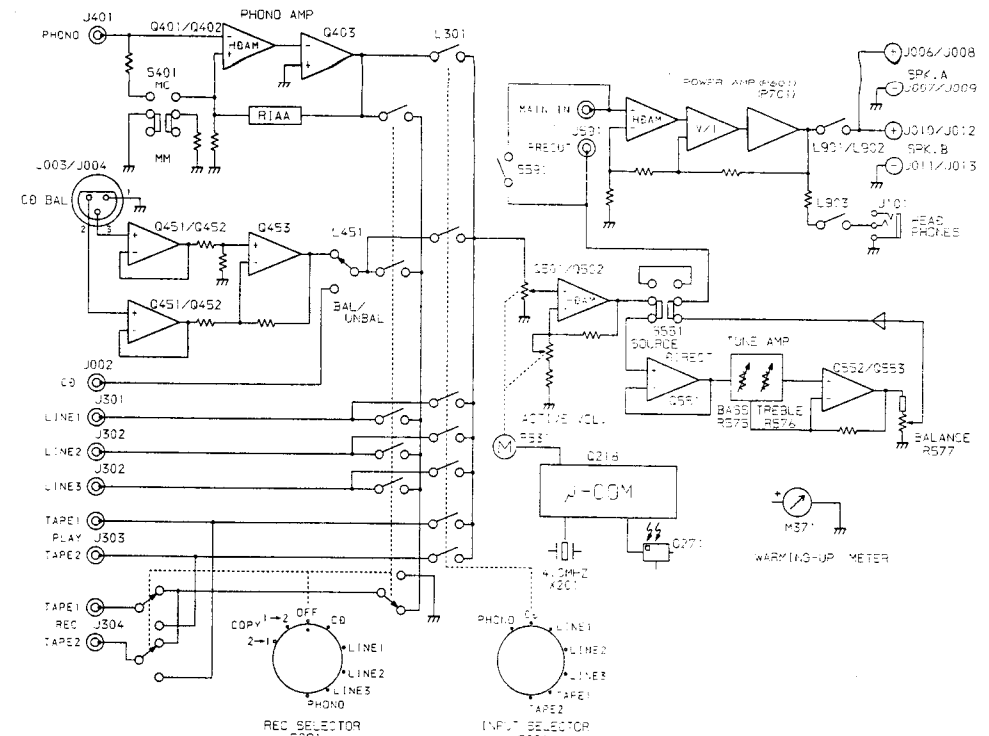
In case of difficulties, do not hesitate to contact the Technical  
Department at above mentioned address.

## 1. TECHNICAL SPECIFICATIONS

Rated power output (20 Hz to 20 kHz, 2CH simultaneous drive)	100 W x 2 (8 $\Omega$ load)
	160 W x 2 (6 $\Omega$ load)
	200 W x 2 (4 $\Omega$ load)
Total harmonic distortion (20 Hz to 20 kHz, 2CH drive, 8 $\Omega$ load)	0.008 %
Cross-modulation distortion (SMPTE)	0.008 %
Output bandwidth (8 $\Omega$ load, 0.04 %)	10 Hz to 50 kHz
Frequency response (CD, SOURCE DIRECT)	5 Hz to 100 kHz, +0/-1 dB
Damping factor (8 $\Omega$ load, 20 Hz to 10 kHz)	180
Input sensitivity/input impedance	
PHONE (MC)	250 $\mu$ V/100 $\Omega$
PHONE (MM)	2.8 mV/47 k $\Omega$
HIGH LEVEL	200 mV/10 k $\Omega$
MAIN IN	2 V/100 k $\Omega$
Output voltage/output impedance	
PRE OUT	2 V/900 $\Omega$
Maximum allowable PHONE input (1 kHz)	
MC	12 mV
MM	130 mV
RIAA deviation (20 Hz to 20 kHz)	$\pm 0.2$ dB
S/N (IHF A network, input shorted)	
PHONE (MC)	76 dB
PHONE (MM)	90 dB
HIGH LEVEL	110 dB
Tone control	
BASS (100 Hz)	$\pm 8$ dB
TREBLE (10 kHz)	$\pm 8$ dB
Supply voltage	
/02 version	230 V AC, 50 Hz
F version	100 V AC, 50/60 Hz
Power consumption	300 W
Dimensions ( Maximum )	
Width	458 mm
Height	166 mm
Depth	464 mm
Weight	23.0 kg
Accessories	
Remote control unit (RC-17PM)	x 1
Dimensions	
Width	44 mm
Height	239 mm
Depth	17.5 mm
Weight (without batteries)	189 g
SUM-4 (R6/ "AA" size) dry cell battery	x 2

Design and specifications are subject to change without notice.

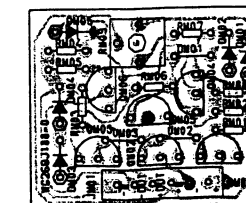
## 2. BLOCK DIAGRAM

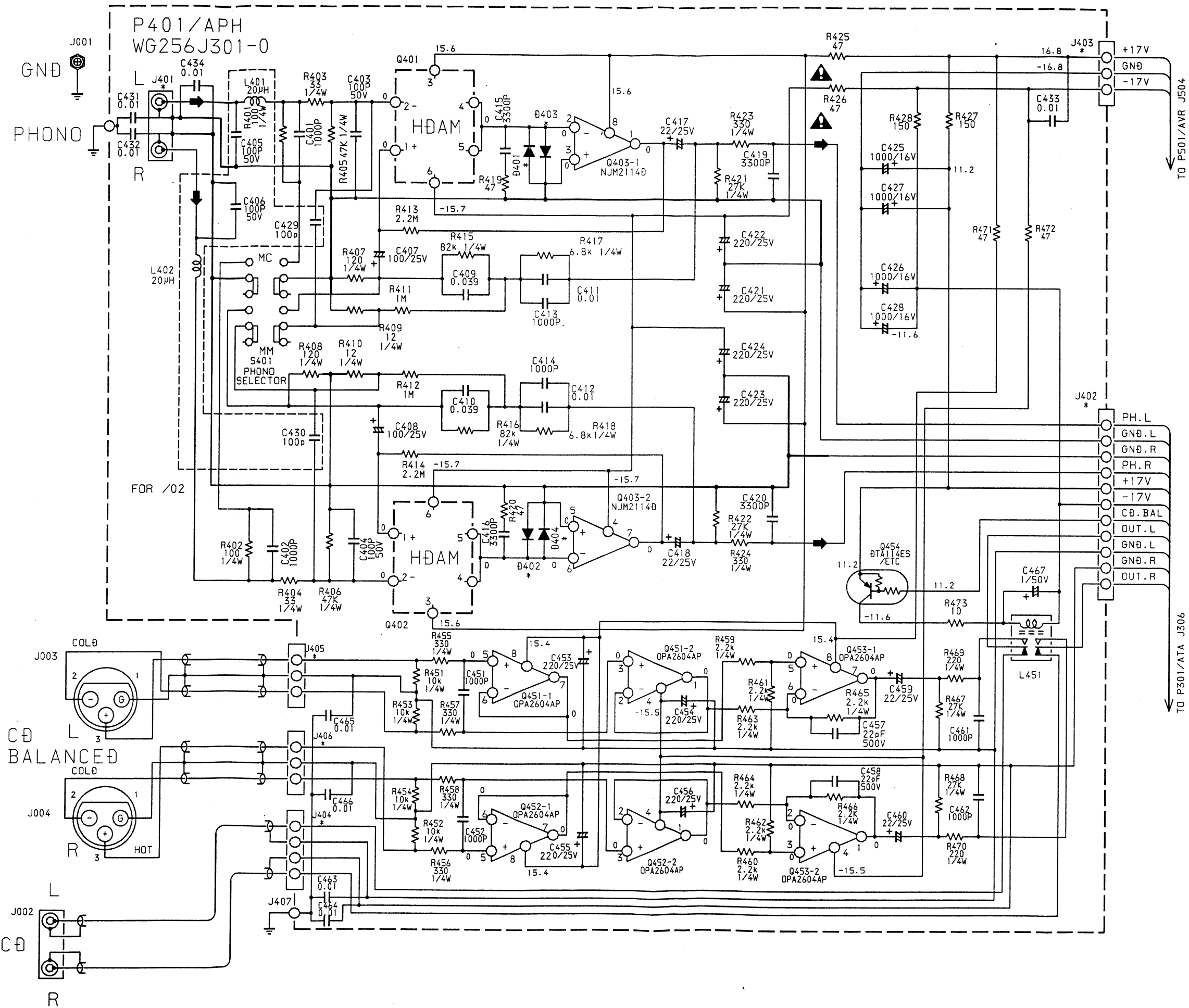


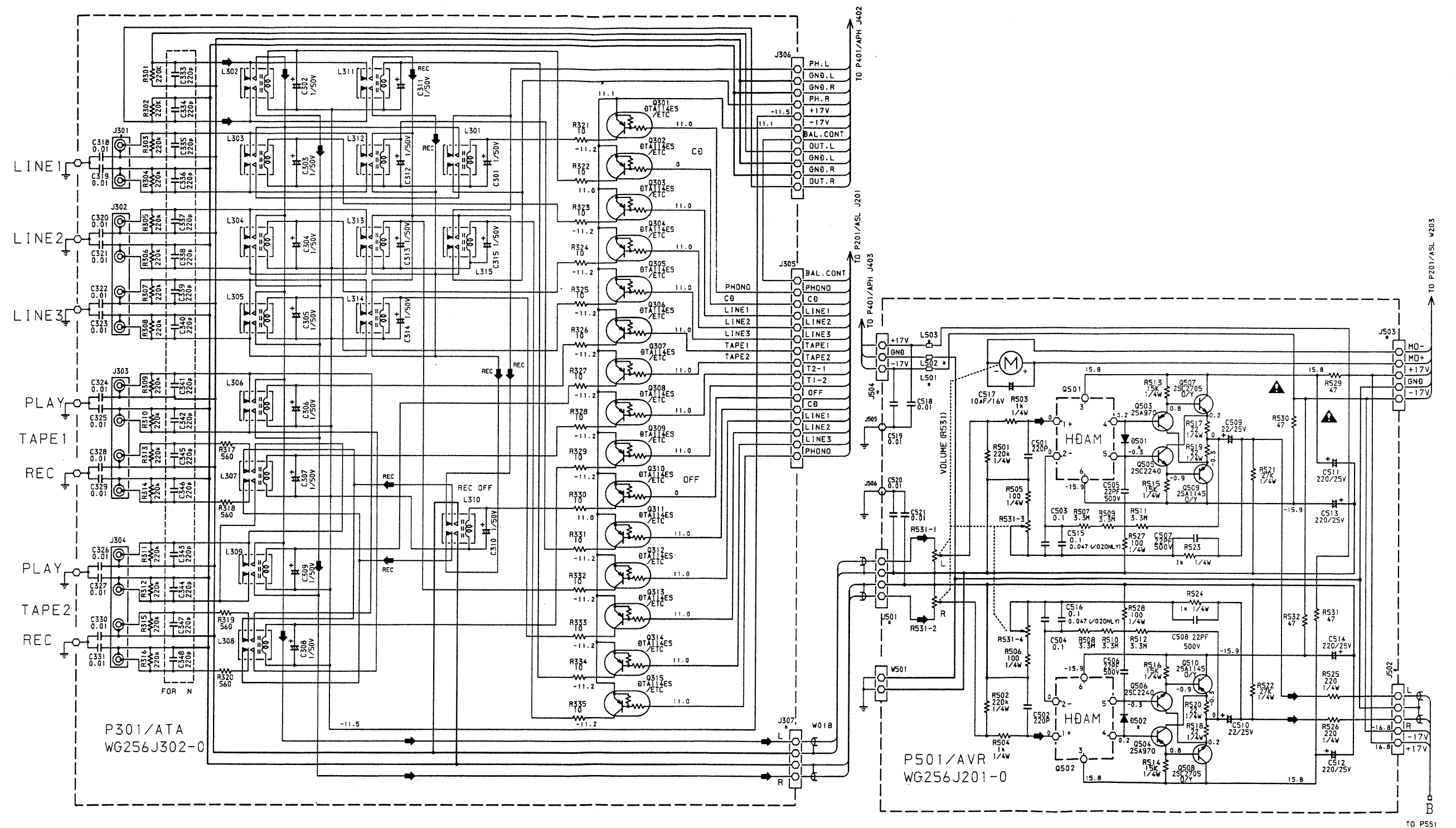
## 3. TEST EQUIPMENT REQUIRED FOR SERVICING

Item	Use
項目	使用 方法
Distortion Analyzer 歪率計	Distortion measurements 歪の測定
Audio Oscillator 低周波発振器	Sinewave and squarewave signal source 正弦波及び矩形波の信号源
AC VTVM AC VTVM	Voltage measurements (AC) 交流電圧の測定
Oscilloscope オシロスコープ	Waveform analysis and trouble shooting and ASO alignment 波計分析、トラブルシューティング及び ASO の調整
DC VTVM DC VTVM	Voltage measurements (DC) 直流電圧の測定
AC Wattmeter 交流ワットメーター	Monitors primary power to amplifier アンプの一次側消費電力のモニター
Line Voltmeter 電源電圧計	Monitors potential of primary power to amplifier アンプの一次側消費電圧のモニター
Variable Autotransformer スライダック	Adjust level of primary power to amplifier アンプの一次側電圧の調整
Circuit Tester デスター	Trouble shooting トラブルシューティング
Shorting Plug ショート用プラグ	Shorts amplifier input to eliminate noise pickup 雑音を拾わないようにアンプ入力を短絡する

PCS 99 519











P601

Q618

Q617

Q615

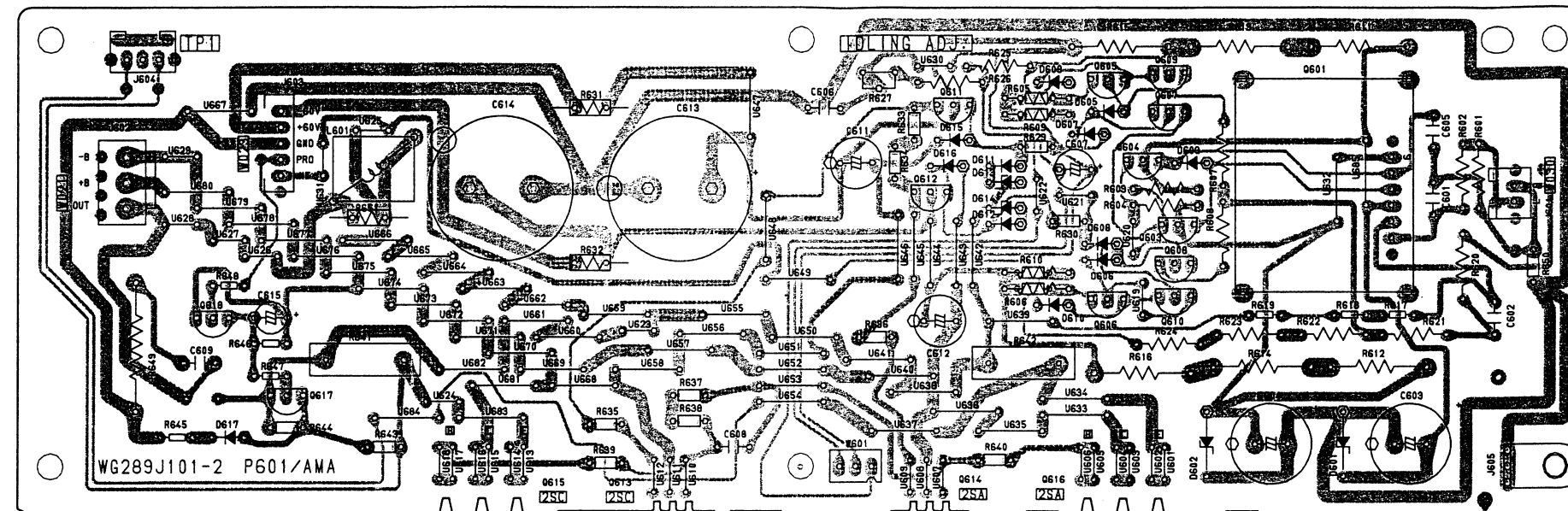
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Q611  
Q612

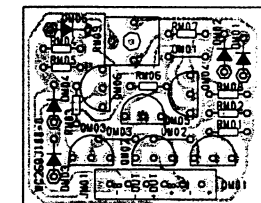
Q614

Q605 Q609  
Q607 Q603  
Q606 Q608  
Q616 Q610

P651  
Q602



HDAM



P701

Q709 Q705  
Q707  
Q703 Q704  
Q708 Q706  
Q710 Q716

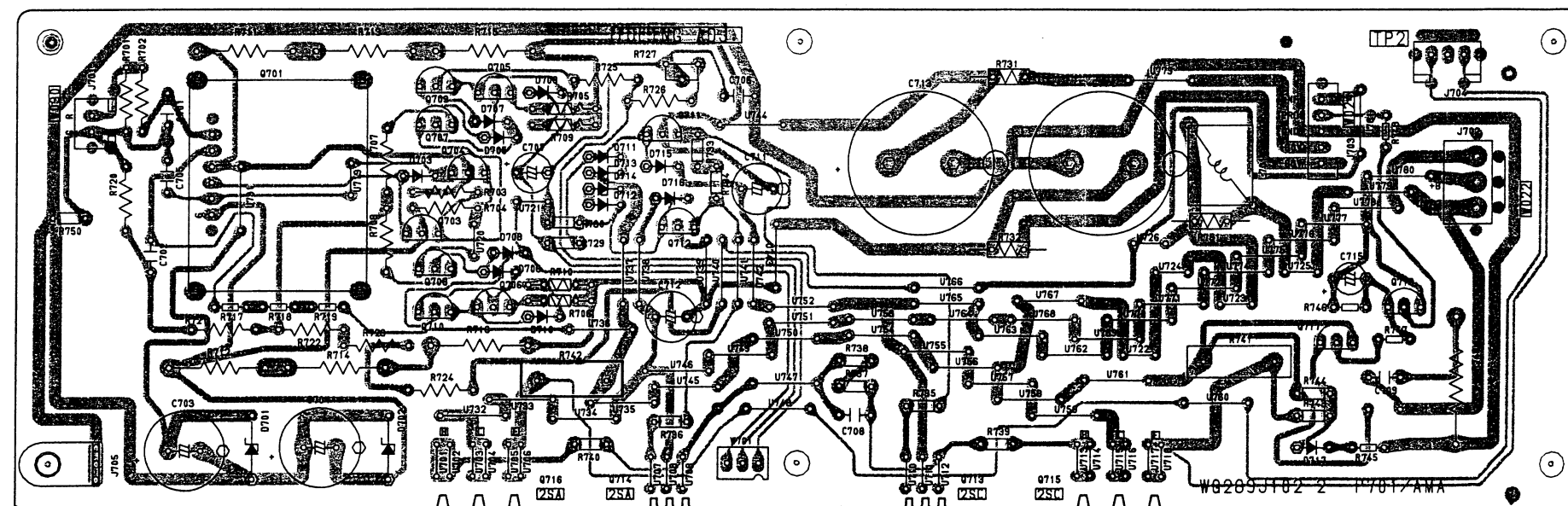
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Q714

Q713

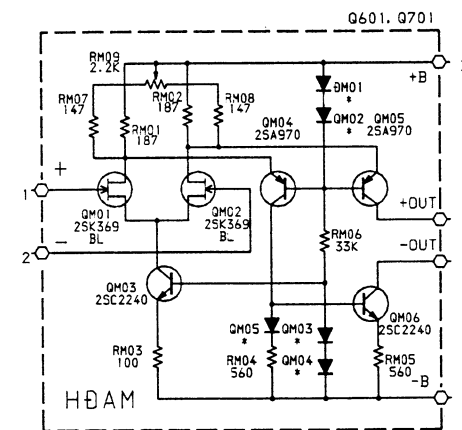
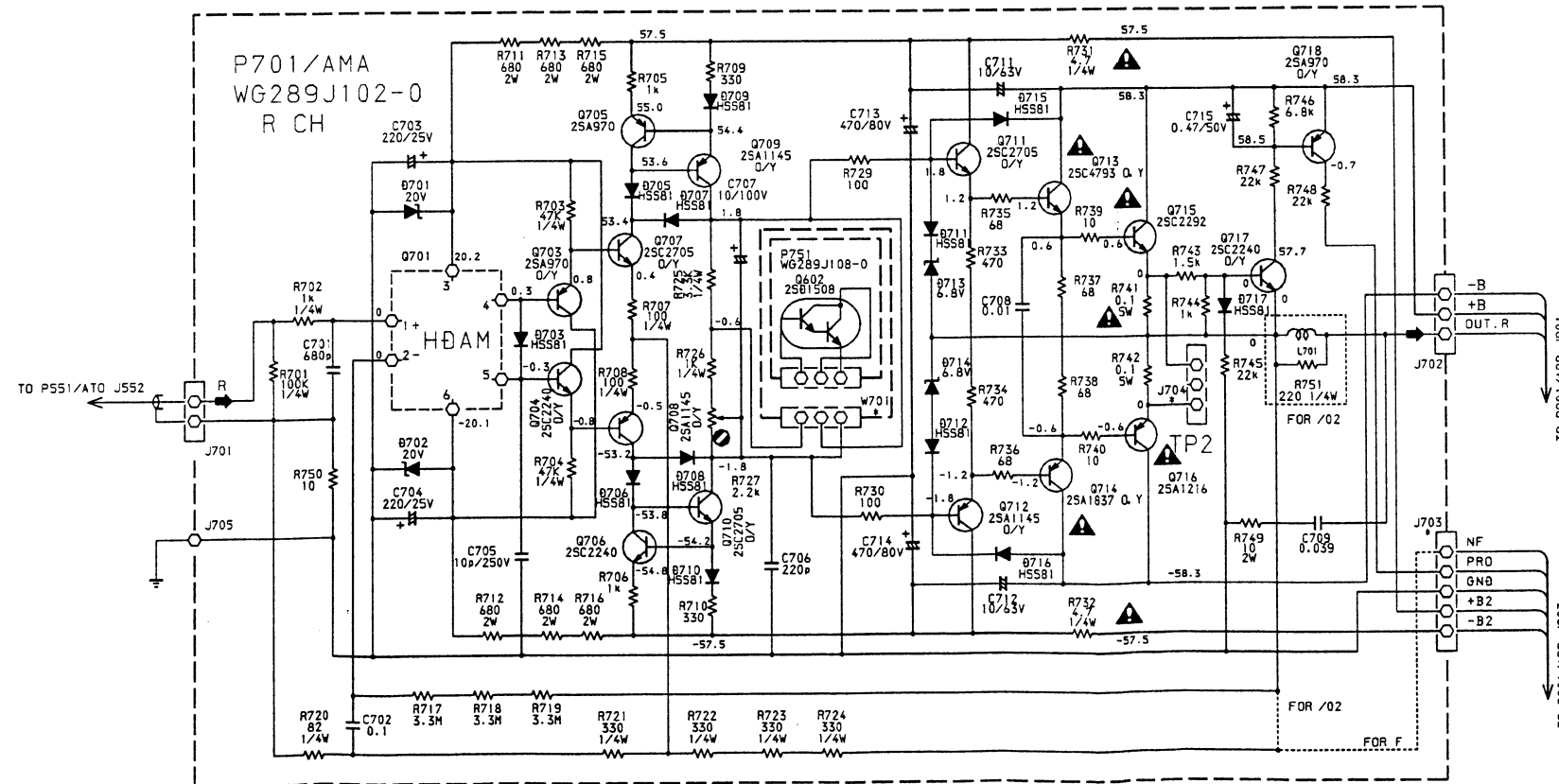
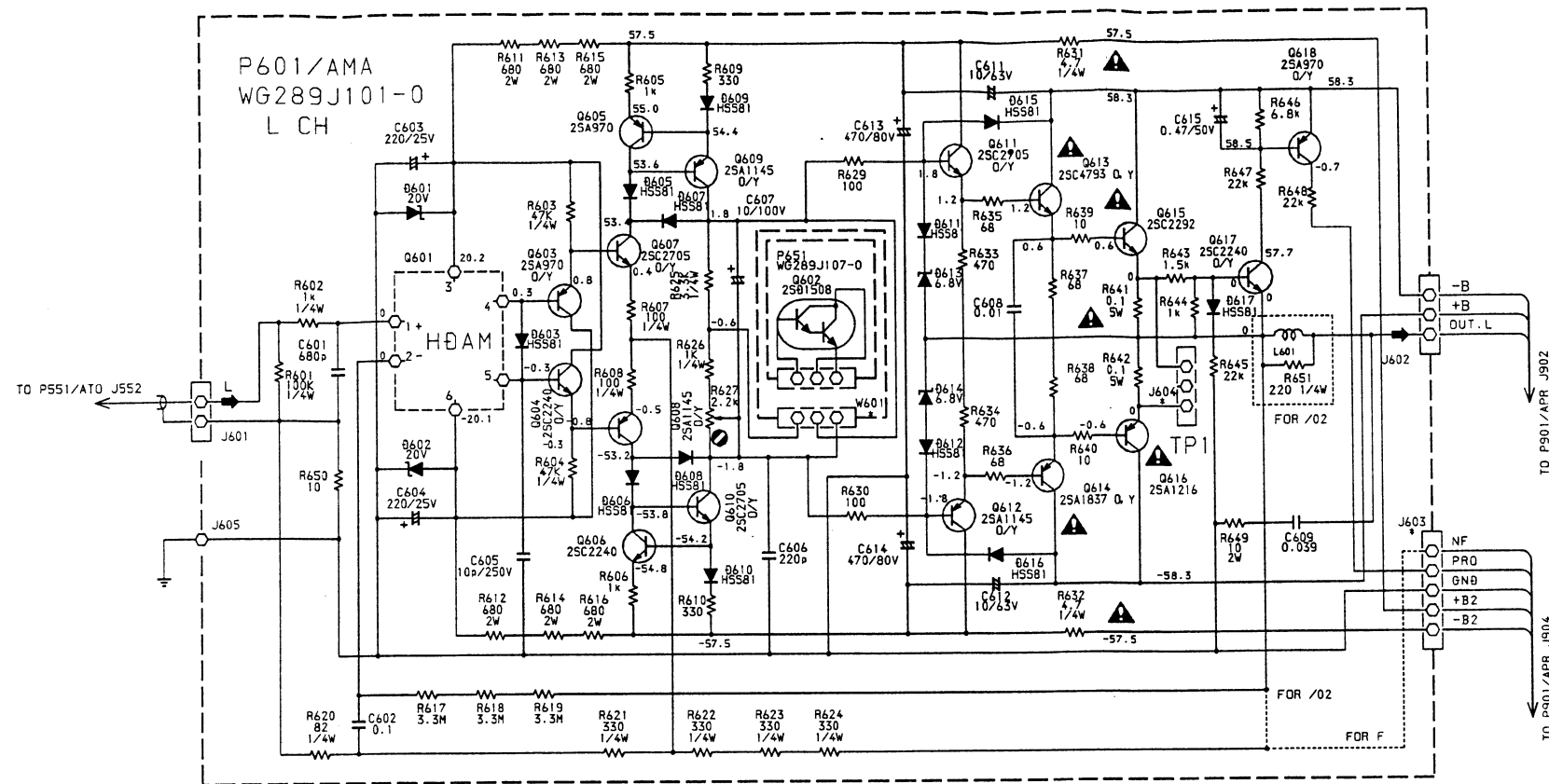
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Q717 Q718

P751  
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P201

**Q218**

**Q219**

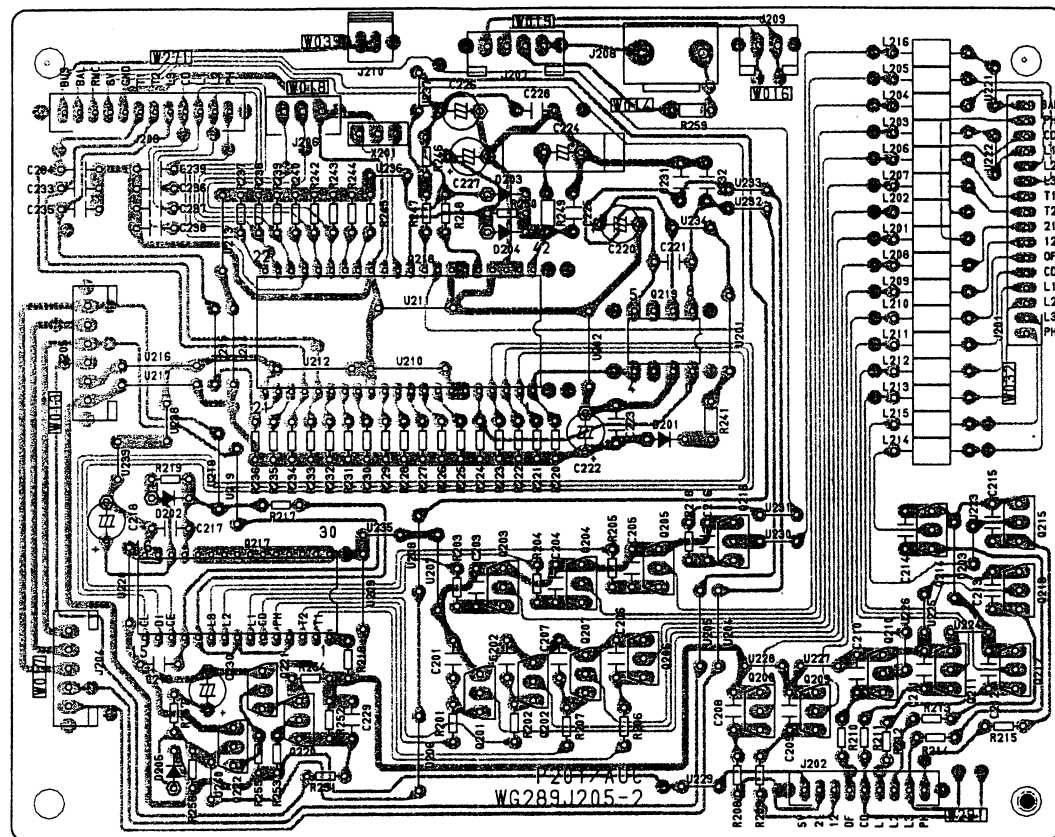
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Q203    Q204    Q205    Q216

Q213

Q201 Q202 Q207 Q206 Q208 Q209 Q210 Q211 Q212

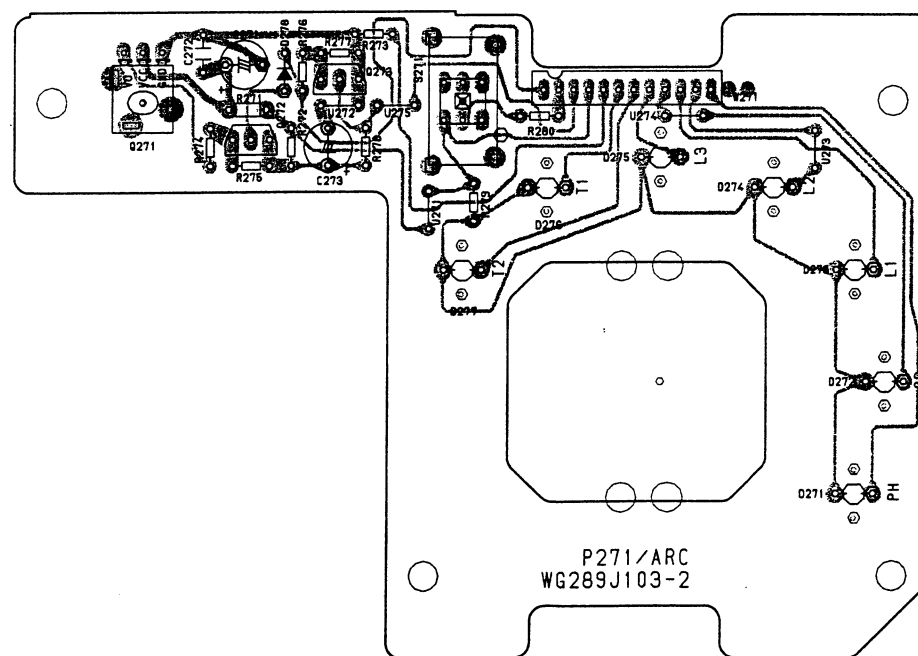
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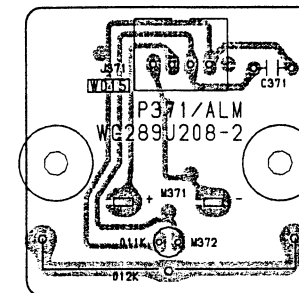
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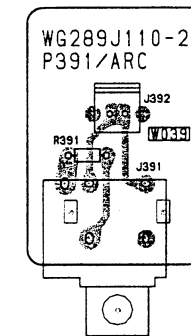
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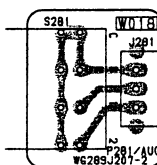
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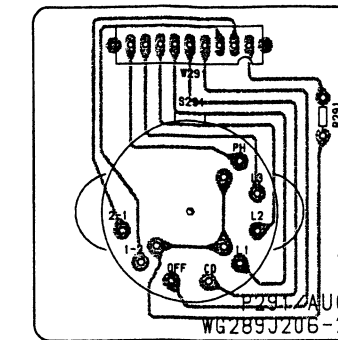
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P281

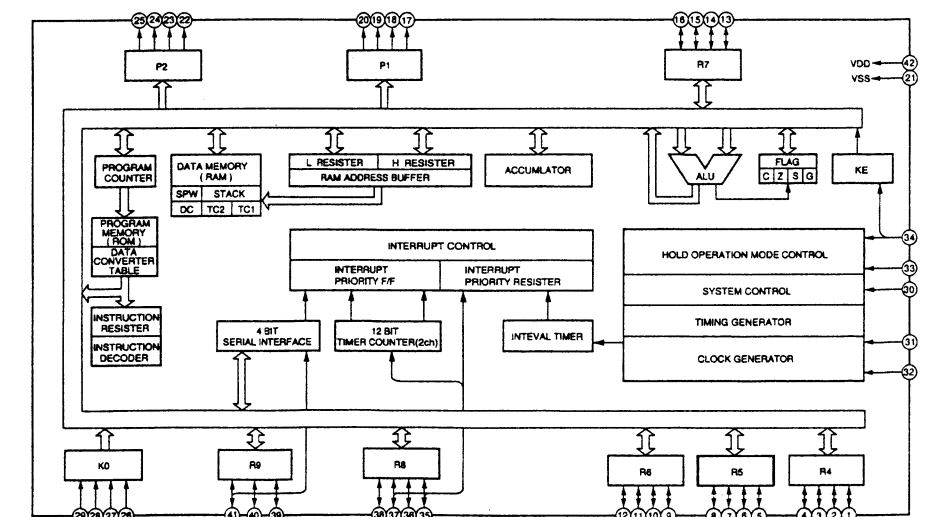


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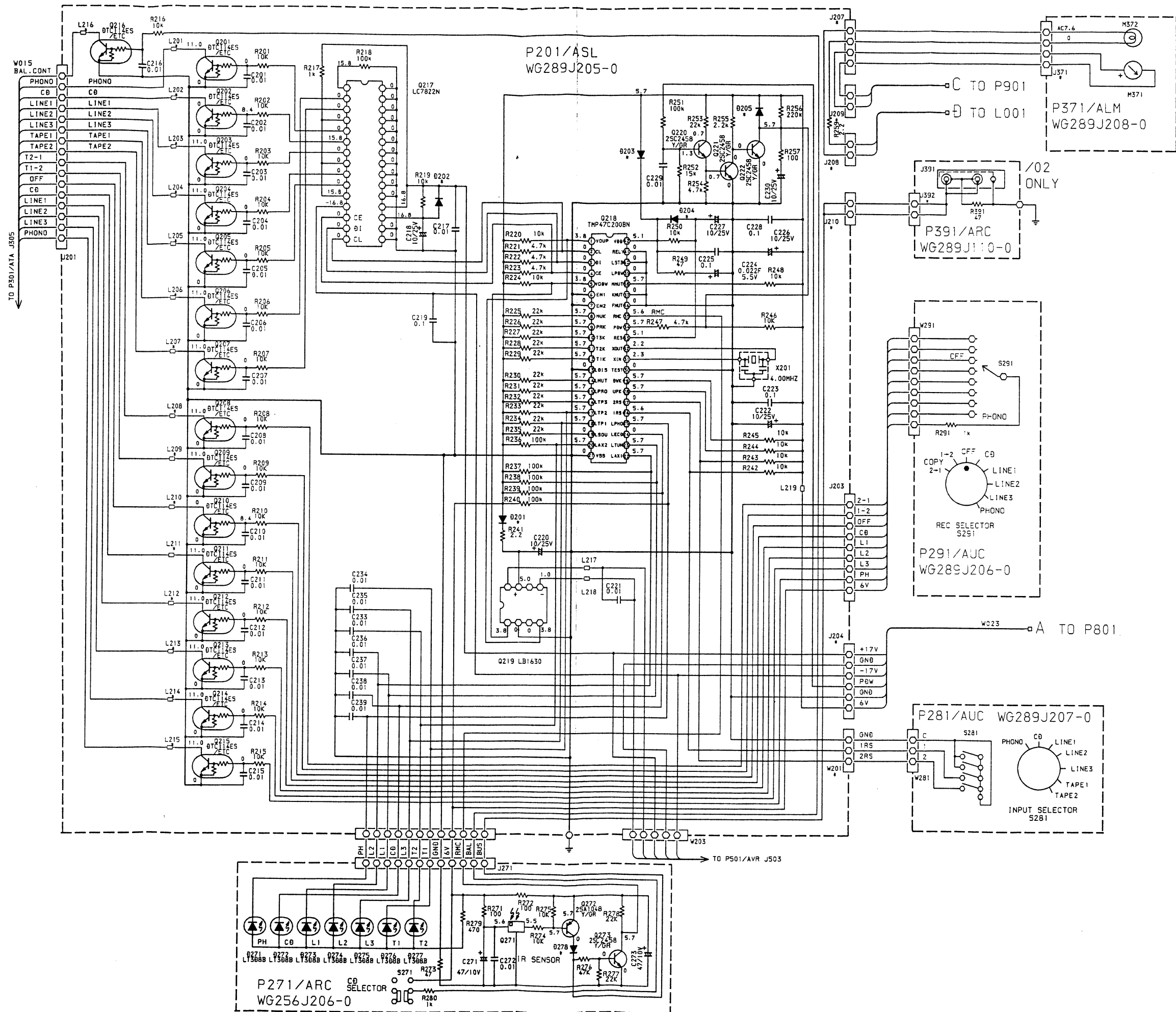
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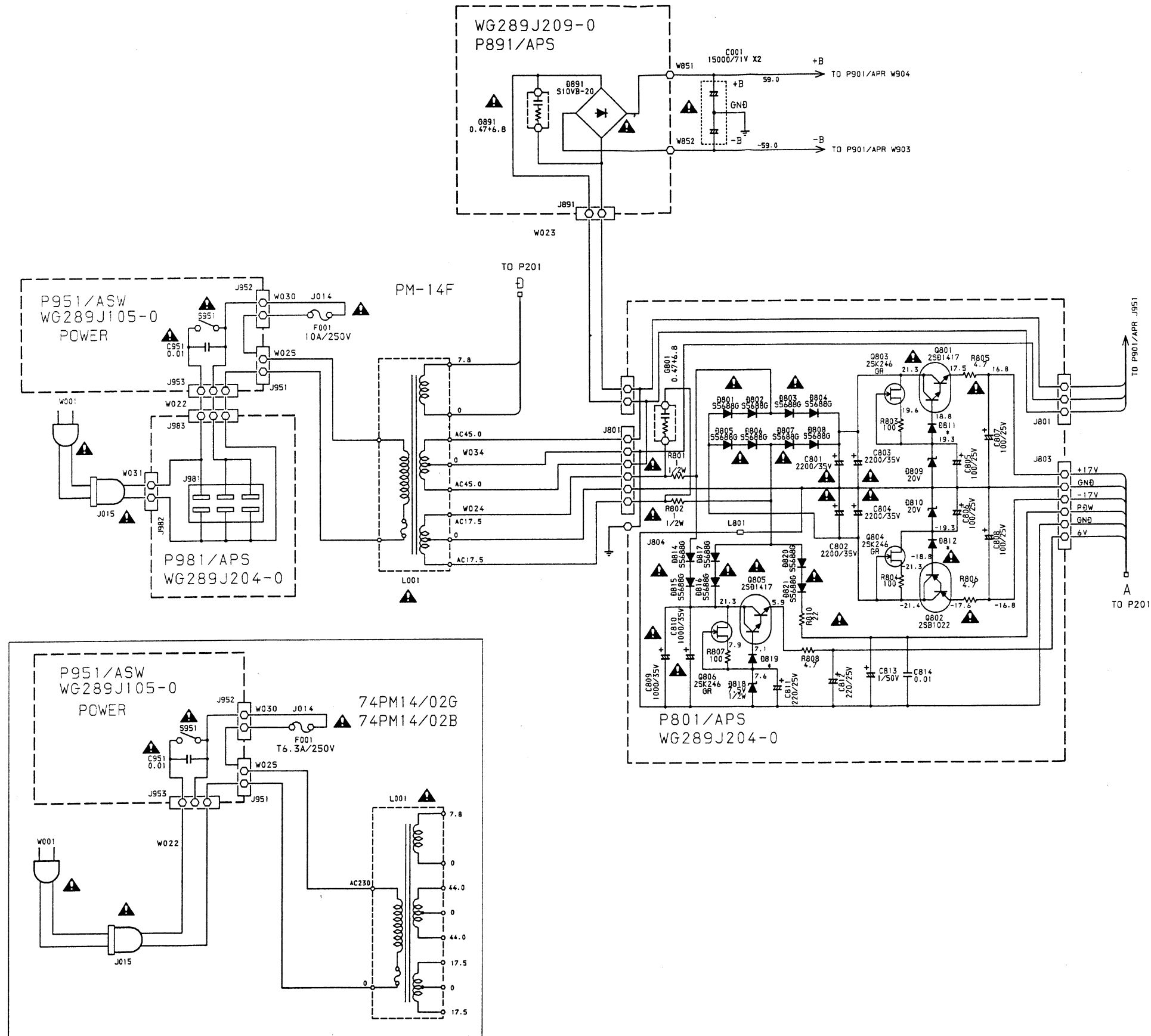
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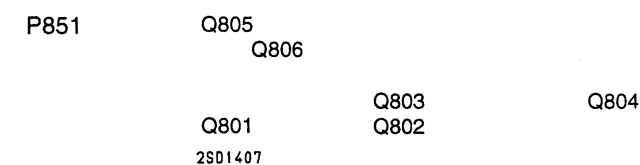
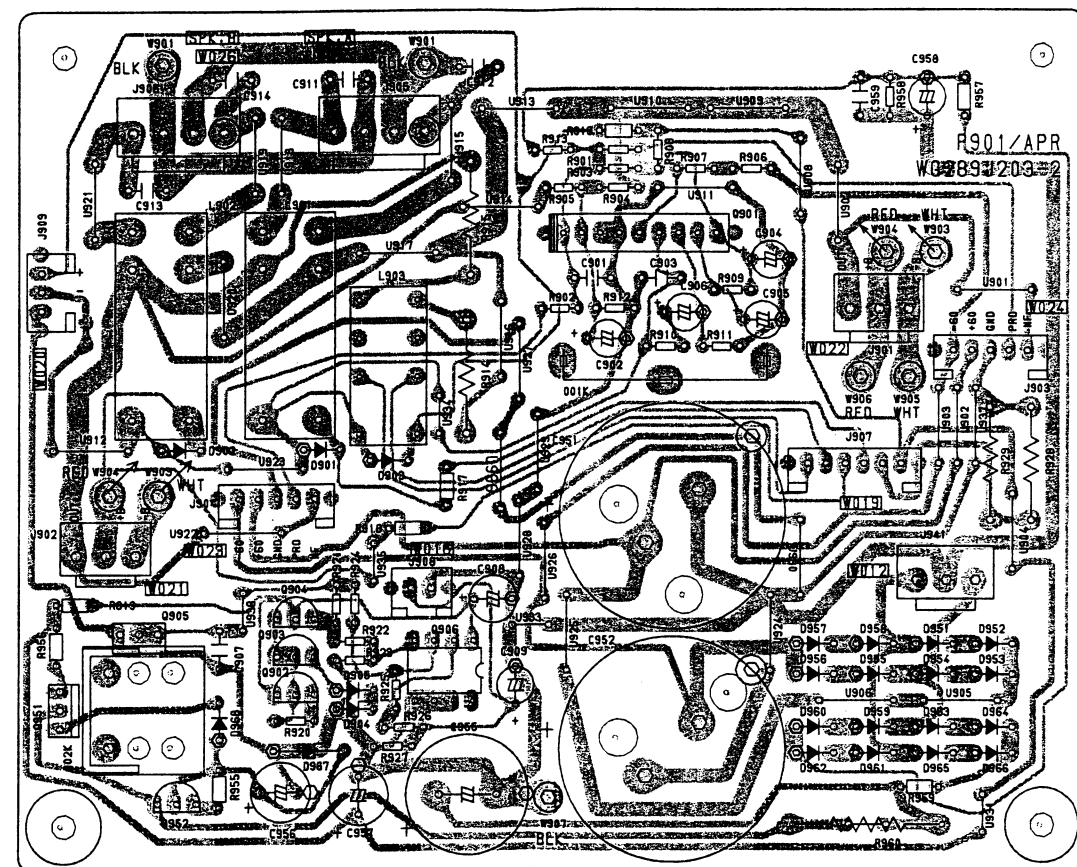
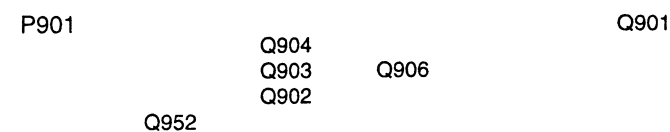
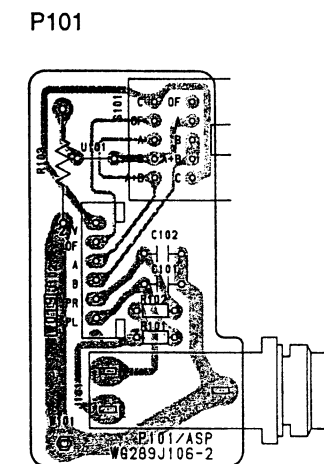
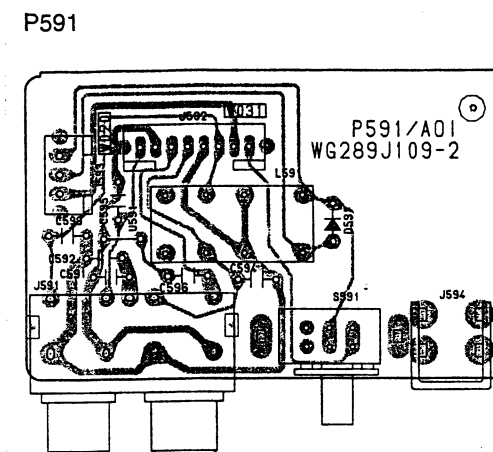
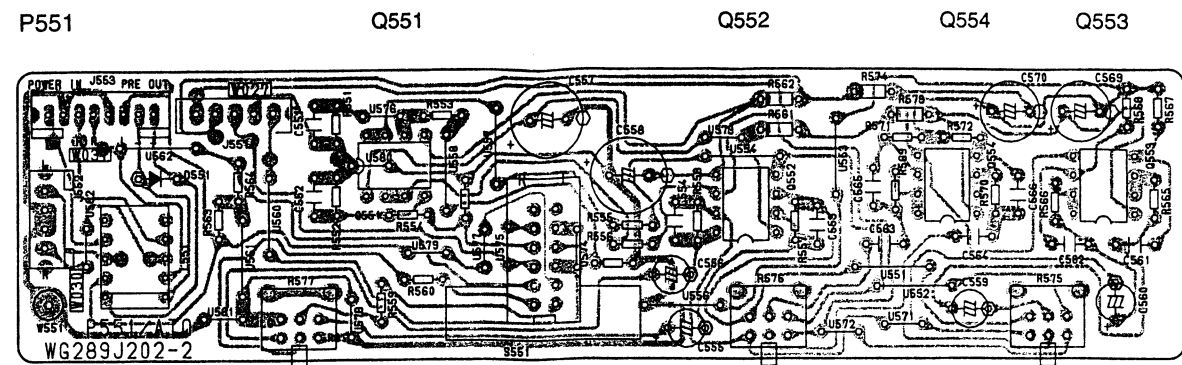


PIN NO.	PORT NAME		I/O	ACT	FUNCTION
1	R40	VOUP	O	L	VOLUME CONTROL (UP)
2	R41	CL	O	H	SERIAL OUTPUT (CLOCK)
3	R42	DI	O	H	SERIAL OUTPUT (DATA)
4	R43	CE	O	H	SERIAL OUTPUT (ENABLE)
5	R50	VODW	O	L	VOLUME CONTROL (DOWN)
6	R51	EN1	I	-	MODEL SELECT #1
7	R52	EN2	I	-	MODEL SELECT #2
8	R53	MUK	I	L	KEY INPUT MUTE
9	R60	PRK	I	-	KEY INPUT PROCESSOR
10	R61	T3K	I	L	KEY INPUT TAPE3
11	R62	T2K	I	L	KEY INPUT TAPE2
12	R63	T1K	I	L	KEY INPUT TAPE1
13	R70	LDIS	O	L	LED DISPLAY OTHER
14	R71	LMUT	O	L	LED DISPLAY MUTE
15	R72	LPRO	O	L	LED DISPLAY PROCESSOR
16	R73	LTP3	O	L	LED DISPLAY TAPE3
17	P10	LTP2	O	L	LED DISPLAY TAPE2
18	P11	LTP1	O	L	LED DISPLAY TAPE1
19	P12	LSOU	O	L	LED DISPLAY SOURCE
20	P13	LAX2	O	L	LED DISPLAY AUX2
21	Vss	Vss	-	-	GND.

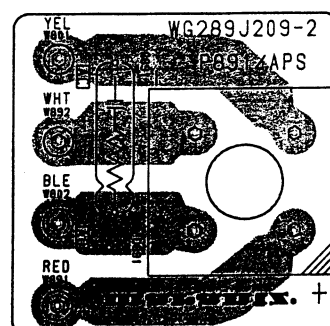
PIN NO.	PORT NAME		I/O	ACT	FUNCTION
22	P20	LAX1	O	L	LED DISPLAY AUX1
23	P21	LTUN	O	L	LED DISPLAY TUNER
24	P22	LECD	O	L	LED DISPLAY CD
25	P23	LPHO	O	L	LED DISPLAY PHONO
26	K00	1RS	I	L	ROTARY ENCODER BIT1
27	K01	2RS	I	L	ROTARY ENCODER BIT2
28	K02	UPK	I	L	SEQUENCE UP
29	K3	DWK	I	L	SEQUENCE DOWN
30	TEST	TEST	-	-	NOT USED (GND.)
31	XIN	XIN	-	-	CLOCK 4.00MHz
32	XOUT	XOUT	-	-	
33	RESET	RES	I	L	RESET
34	HOLD	PDW	I	L	POWER DOWN CHECK
35	R80	RMC	I	L	REMOTE CONTROL (RC-5)INPUT
36	R81	FMUT	O	L	KMUT + MMUT
37	R82	KMUT	O	L	FUNCTION MUTING
38	R83	MMUT	O	L	MANUAL MUTING
39	R90	LPOW	O	L	LED DISPLAY POWER
40	R91	LSTB	O	L	LED DISPLAY STANDBY
41	R92	RELY	O	H	STANDBY RELAY CONTROL
42	VDD	VDD	-	-	POWER SUPPLY +5.4V



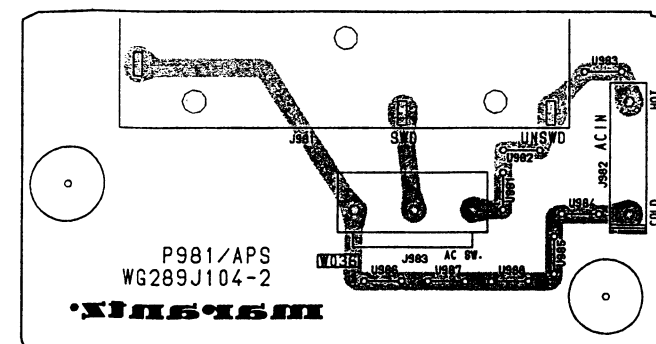




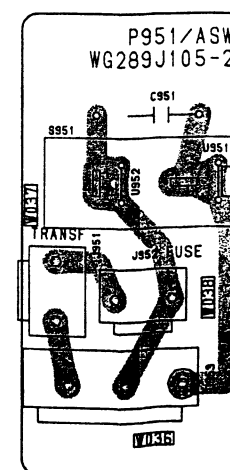
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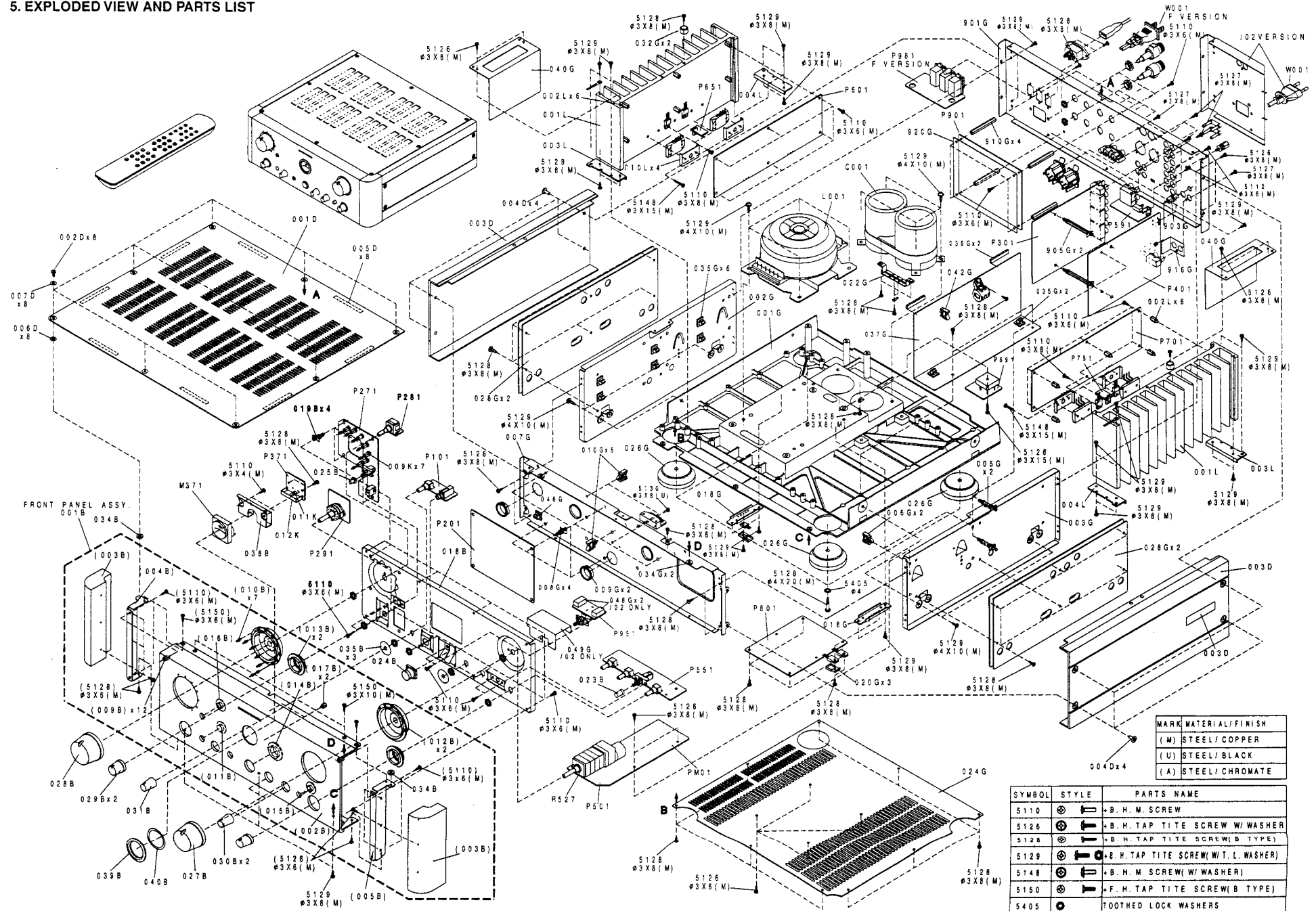
P981 [ F VERSION ]



P951



## 5. EXPLODED VIEW AND PARTS LIST

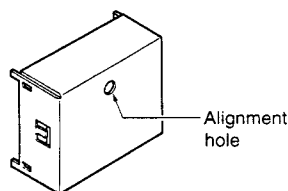




POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MUJ)	POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MUJ)
001B	FN		FRONT PANEL ASSY GOLD	289J248510	J009		4822 265 11425	TERMINAL.WBT SPK.WHT	YT01010372
001B	/02B		FRONT PANEL ASSY BLACK	289J248520	J010		4822 265 11424	TERMINAL.WBT SPK.RED	YT01010365
001B	/02G		FRONT PANEL ASSY GOLD	289J248530	J011		4822 265 11425	TERMINAL.WBT SPK.WHT	YT01010372
002B	FN		FRONT PANEL GOLD	289J248110	J012		4822 265 11424	TERMINAL.WBT SPK.RED	YT01010365
002B	/02B	4822 459 05106	FRONT PANEL BLACK	289J248020	J013		4822 265 11425	TERMINAL.WBT SPK.WHT	YT01010372
002B	/02G	4822 459 05107	FRONT PANEL GOLD	289J248120	▲ J014	F		JACK,FUSE HOLDER 31.8mm	YJ08000605
003B	FN,/02G	4822 426 10074	ESCUTCHEON GOLD	256J063010	▲ J014	/02	4822 267 31818	JACK,FUSE HOLDER 20mm	YJ08000610
003B	/02B	4822 426 10075	ESCUTCHEON BLACK	256J063110	▲ J015		4822 265 11399	JACK,2P AC INLET SOT-16C	YJ04002365
010B		4822 381 11893	LENS,INPUT../TAPE1/TAPE2	269J355010	▲ L001	F		MAINS TRANSFORMER	TS42002040
011B	FN,/02G	4822 381 12016	LENS,IR SENSOR GOLD	256J355030	▲ L001	/02	4822 146 11054	MAINS TRANSFORMER	TS42002050
011B	/02B	4822 381 12015	LENS,IR SENSOR BLACK	256J355040	L002		4822 528 10691	FERRITE CORE TFCK-16-8-13	FC50160035
012B	FN,/02G		BUSHING,VOL./INPUT SEL.GL	256J259210					
012B	/02B		BUSHING,VOL./INPUT SEL.BL	256J259110	R281		4822 052 10109	10Ω ±5% 1/4W	GG05100140
013B	FN,/02G		BUSHING,BAL./REC SEL. GL	256J259020					
013B	/02B		BUSHING,BAL./REC SEL. BL	256J259120	▲ W001	F	4822 321 11337	MAINS CORD,MITI	ZC01802080
014B	FN,/02G		BUSHING,FOR POWER GOLD	256J259030					
014B	/02B		BUSHING,FOR POWER BLACK	256J259130	▲ W001	/02	4822 321 11439	DC-302-J 125V MAINS CORD 2P 10A 250V CLASS2	ZC01803080
015B	FN,/02G		BUSHING,SOURCE DIRECT	256J259040					
015B	/02B		BUSHING,SOURCE DIRECT	256J259140					
016B	FN,/02G		BUSHING,CD SELECTOR GL	289J259110					
016B	/02B		BUSHING,CD SELECTOR BL	289J259010	001T	F		PACKING USER GUIDE	289J851110
					001T	/02	4822 736 16441	USER GUIDE	289J851310
023B	FN,/02G	4822 410 63898	BUTTON,SOURCE DIRECT GL	144J270010					
023B	/02B	4822 410 10227	BUTTON,SOURCE DIRECT BL	144J270110					
024B	FN,/02G	4822 410 11276	BUTTON,POWER GOLD	176J270150	T100		4822 219 10324	REMOTE COMMANDER RC-17PM	ZK269J0010
024B	/02B	4822 410 11275	BUTTON,POWER BLACK	176J270050					
025B	FN,/02G	4822 410 12027	BUTTON,CD SELECTOR GL	289J270110					
025B	/02B	4822 410 12026	BUTTON,CD SELECTOR BL	289J270010					
027B	FN,/02G	4822 410 12029	KNOB,MASTER VOLUME GL	289J154110					
027B	/02B	4822 410 12028	KNOB,MASTER VOLUME BL	289J154010					
028B	FN,/02G	4822 410 12032	KNOB,INPUT SELECTOR GL	289J154120					
028B	/02B	4822 410 12031	KNOB,INPUT SELECTOR BL	289J154020					
029B	FN,/02G	4822 410 12034	KNOB,BAL/REC.SEL GOLD	289J154130					
029B	/02B	4822 410 12033	KNOB,BAL/REC.SEL BLACK	289J154030					
030B	FN,/02G	4822 410 12036	KNOB,BASS/TREBLE GOLD	289J154140					
030B	/02B	4822 410 12035	KNOB,BASS/TREBLE BLACK	289J154040					
031B	FN,/02G	4822 410 12038	KNOB,SPEAKER GOLD	289J154150					
031B	/02B	4822 410 12037	KNOB,SPEAKER BLACK	289J154050					
039B	FN,/02G	4822 532 13059	ESCUTCHEON,METER GOLD	289J063110					
039B	/02B	4822 532 13058	ESCUTCHEON,METER BLACK	289J063010					
040B			STICKER,ADHESIVE FOR METER ESCUTCHEON	289J122010					
001D	FN,/02G	4822 442 01523	TOP LID GOLD	256J257020					
001D	/02B	4822 442 01522	TOP LID BLACK	256J257120					
002D	FN,/02G	4822 502 14425	SCREW FOR TOP LID GOLD	323S010020					
002D	/02B	4822 502 21693	SCREW FOR TOP LID BLACK	323S010030					
003D	FN,/02G	4822 426 10718	SIDE PANEL GOLD	256J249010					
003D	/02B	4822 426 10717	SIDE PANEL BLACK	256J249110					
004D	FN,/02G	4822 502 14613	SCREW,SIDE PANEL GOLD	258S010020					
004D	/02B	4822 502 14612	SCREW,SIDE PANEL BLACK	258S010010					
026G		4822 462 11116	LEG GOLD	163J057410					
903G		4822 410 12039	BUTTON,MM/MC SEL SW	058J270060					
▲ C001	F		ELECT,15000μF 71V	E115907110					
			ALB-H 63X80						
▲ C001	/02	4822 124 12279	ELECT,15000μF 71V	E115907120					
			ALB-H 63X100						
▲ F001	F		FUSE, 10A 250V MITI GRU	FS1100C570					
▲ F001	/02	4822 070 36302	FUSE,T6.3A 250V BS LISTED	FS10630850					
J002		4822 290 81671	TERMINAL,2P RCA GLD T6021	YT02021240	001S	FN		NOT STANDARD SPARE PARTS	289J801020
J003			PLUG,XLM-3-31PCS	YP10003300	002S	F		PACKING CASE GOLD	256J809010
J004			PLUG,XLM-3-31PCS	YP10003300	B001	F		CUSHION L/R	ZF24302000
J006		4822 265 11424	TERMINAL.WBT SPK.WHT	YT01010360				BATTERY,UM-4NEPH 2S	
J007		4822 265 11425	TERMINAL.WBT SPK.WHT	YT01010370					
J008		4822 265 11424	TERMINAL.WBT SPK.WHT	YT01010380					

## 6. DC OFFSET VOLTAGE ALIGNMENT

- Before switching the mains switch. Turn down the master volume to the minimum position and set the balance volume and tone volumes at the center positions. Set variable resistors R627(on the PCB P601:L ch) and R727(on the PCB P701:R ch) fully counterclockwise.
- Connect the digital voltage meter to the speaker terminal. And set the digital voltage meter for the DC position.
- Turn the mains switch ON. Put thin adjustment screw driver in to the hole of the HDAM (Q601:L ch / Q701:R ch) copper cover. Adjust variable resistors in the HDAM (Q601:L ch / Q701:R ch) value at 0mV  $\pm$  5mV with in 10 seconds after speaker relay turn ON.



## 7. IDLING CURRENT ALIGNMENT

### REMARK

Before "Idling current alignment", "DC offset voltage alignment" have to be done!!

- Each of connectors J604(TP1) (on the PCB P601:Lch) and J704(TP2) (on the PCB P701:Rch) are provided with three test points. Connect the digital voltage meter, set for the DC voltage input, to the test points at the two extremities of three test points of J604(TP1) and J704(TP2).
- After the setup above, turn the mains switch ON and heat up the amplifier about 10 minutes.
- Adjust variable resistors R627(on the PCB P601:L ch) and R727(on the PCB P701:R ch) according to the digital volt meter reading. The target setting value is 12mV(60mA) for both L ch and R ch.

## DC オフセット電圧調整

- 本体の電源スイッチを入れるまえに、ボリュームを最小に、バランス及びトーンコントロールをセンターに合わせます。P601基板上のR627(L ch)及びP701基板上のR727(R ch)の半固定抵抗を反時計回りにしぼりきります。
- 本体背面のスピーカー端子にデジタルボルツメータを接続します。(レンジはDCに設定する。)
- HDAM(Q601:L ch/Q701:R ch)のカバーにあいた穴に調整用ドライバーをさし込み、中の半固定抵抗を回せるようにします。電源スイッチをオンにし、スピーカリレーがオンになってから10秒以内に半固定抵抗を回しデジタルボルツメータの値が0mV $\pm$ 5mVになるように調整します。

## アイドリング電流調整

### 【注意】

アイドリング電流の調整は必ずDCオフセット電圧の調整を終えてから行って下さい。

- P601基板上のコネクターJ604(TP1)及びP701基板上のコネクターJ704(TP2)の3本の調整用端子のうちの両端の2本にデジタルボルツメータを接続します。(レンジはDCに設定する。)
- 電源スイッチをオンにし、アイドリング電流が安定するまで、およそ10分間放置します。
- P601基板上の半固定抵抗R627(L ch)とP701基板上の半固定抵抗R727(R ch)を時計回りにまわしデジタルボルツメータの値が12mV $\pm$ 1mV(60mA)になるように調整します。

## 8. ELECTRICAL PARTS LIST

### ASSIGNMENT OF COMMON PARTS CODES.

#### RESISTORS

R\*\*\*: 1) GD05  $\times \times \times$  140, Carbon film fixed resistor,  $\pm 5\%$  1/4W  
R\*\*\*: 2) GD05  $\times \times \times$  160, Carbon film fixed resistor,  $\pm 5\%$  1/6W

① Resistance value

Examples :

① Resistance value

0.1  $\Omega$  .... 001    10  $\Omega$  .... 100    1 k $\Omega$  .... 102    100 k $\Omega$  .... 104  
0.5  $\Omega$  .... 005    18  $\Omega$  .... 180    2.7 k $\Omega$  .... 272    680 k $\Omega$  .... 684  
1  $\Omega$  .... 010    100  $\Omega$  .... 101    10 k $\Omega$  .... 103    1 M $\Omega$  .... 105  
6.8  $\Omega$  .... 068    390  $\Omega$  .... 391    22 k $\Omega$  .... 223    4.7 M $\Omega$  .... 475

Note : Please distinguish 1/4W from 1/6W by the shape of parts used actually.

#### CAPACITORS

C\*\*\*: CERAMIC CAP.

3) DD1  $\times \times \times \times$  370.

Ceramic capacitor  
Disc type  
Temp.coeff. P350 ~ N1000, 50V  
② Capacity value  
③ Tolerance

Examples :

② Tolerance (Capacity deviation)

$\pm 0.25$  pF .... 0  
 $\pm 0.5$  pF .... 1  
 $\pm 5\%$  .... 5

\* Tolerance of COMMON PARTS handled here are as follows :

0.5 pF ~ 5 pF ....  $\pm 0.25$  pF  
6 pF ~ 10 pF ....  $\pm 0.5$  pF  
12 pF ~ 560 pF ....  $\pm 5\%$

③ Capacity value

0.5 pF .... 005    3 pF .... 030    100 pF .... 101  
1 pF .... 010    10 pF .... 100    220 pF .... 221  
1.5 pF .... 015    47 pF .... 470    560 pF .... 561

C\*\*\*: CERAMIC CAP.

4) DK16  $\times \times \times$  300.

High dielectric constant ceramic capacitor  
Disc type  
Temp.chara. 2B4, 50V  
④ Capacity value

Examples :

④ Capacity value

100 pF .... 101    1000 pF .... 102    10000 pF .... 103  
470 pF .... 471    2200 pF .... 222

C\*\*\*: 5) ELECTROLY CAP (  $\frac{\square}{\square}$  ), 6) FILM CAP (  $\frac{\square}{\square}$  )

5) EA  $\times \times \times \times \times$  10, Electrolytic capacitor

One-way lead type, Tolerance  $\pm 20\%$   
⑤ Working voltage  
⑥ Capacity value

Examples :

⑤ Capacity value

0.1  $\mu$ F .... 104    4.7  $\mu$ F .... 475    100  $\mu$ F .... 107  
0.33  $\mu$ F .... 334    10  $\mu$ F .... 106    330  $\mu$ F .... 337  
1  $\mu$ F .... 105    22  $\mu$ F .... 226    1100  $\mu$ F .... 118  
2200  $\mu$ F .... 228

⑥ Working voltage

6.3V .... 006    25V .... 025  
10V .... 010    35V .... 035  
16V .... 016    50V .... 050

6) DF15  $\times \times \times$  350

Plastic film capacitor  
One-way type, Mylar  $\pm 5\%$  50V  
DF16  $\times \times \times$  310  
Plastic film capacitor  
One-way type, Mylar  $\pm 10\%$  50V  
⑦ Capacity value

Examples :

⑦ Capacity value

0.001  $\mu$ F (1000 pF) .... 102    0.1  $\mu$ F .... 104  
0.0018  $\mu$ F .... 182    0.56  $\mu$ F .... 564  
0.01  $\mu$ F .... 103    1  $\mu$ F .... 105  
0.015  $\mu$ F .... 153

NOTE : 1) The above CODES (R\*\*\*, R\*\*\*\*, C\*\*\*, C\*\*\*\* and C\*\*\*\*) are omitted on the schematic diagram in some case.

2) On the occasion, be confirmed the common parts on the parts list.

3) Refer to "Common Parts List" for the other common parts (R105, DD4, DK4).

### NOTE ON SAFETY FOR FUSIBLE RESISTOR :

The suppliers and their type numbers of fusible resistors are as follows:

1. KOA Corporation

Part No. (MJL)	Type No. (KOA)	Description
NH05 $\times \times \times$ 140	RF25S $\times \times \times \times$ $\Omega$ J	( $\pm 5\%$ 1/4W)
NH05 $\times \times \times$ 120	RF50S $\times \times \times \times$ $\Omega$ J	( $\pm 5\%$ 1/2W)
NH65 $\times \times \times$ 110	RF73B2A $\times \times \times \times$ $\Omega$ J	( $\pm 5\%$ 1/10W)
NH95 $\times \times \times$ 140	RF73B2E $\times \times \times \times$ $\Omega$ J	( $\pm 5\%$ 1/4W)

\* Resistance value    Resistance value  
(0.1  $\Omega$  ~ 10 k $\Omega$ )

2. Matsushita Electronic Components Co., Ltd

Part No. (MJL)	Type No. (MEC)	Description
NF05 $\times \times \times$ 140	ERD-2FCJ $\times \times \times$	( $\pm 5\%$ 1/4W)
RF05 $\times \times \times$ 140		
NF02 $\times \times \times$ 140	ERD-2FCG $\times \times \times$	( $\pm 2\%$ 1/4W)
RF02 $\times \times \times$ 140		

\* Resistance value    \* Resistance value

Examples :

\* Resistance value

0.1  $\Omega$  .... 001    10  $\Omega$  .... 100    1 k $\Omega$  .... 102    100 k $\Omega$  .... 104  
0.5  $\Omega$  .... 005    18  $\Omega$  .... 180    2.7 k $\Omega$  .... 272    680 k $\Omega$  .... 684  
1  $\Omega$  .... 010    100  $\Omega$  .... 101    10 k $\Omega$  .... 103    1 M $\Omega$  .... 105  
6.8  $\Omega$  .... 068    390  $\Omega$  .... 391    22 k $\Omega$  .... 223    4.7 M $\Omega$  .... 475

### ABBREVIATION AND MARKS

ANT. : ANTENNA	BATT. : BATTERY
CAP. : CAPACITOR	CER. : CERAMIC
CONN. : CONNECTING	DIG. : DIGITAL
HP. : HEADPHONE	MIC. : MICROPHONE
$\mu$ -PRO : MICROPROCESSOR	REC. : RECORDING
RES. : RESISTOR	SPK. : SPEAKER
SW. : SWITCH	TRANSF. : TRANSFORMER
TRIM. : TRIMMING	TRS. : TRANSISTOR
VAR. : VARIABLE	X'TAL : CRYSTAL

### NOTE ON SAFETY :

Symbol  $\triangle$  Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol  $\triangle$ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

### 安全上の注意 :

$\triangle$  がついている部品は、安全上重要な部品です。必ず指定されている部品番号の部品を使用して下さい。

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MUJ)	POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MUJ)
C101	/02	4822 121 42754	P101-SPK.SW. & HEAD PHONES CIRCUIT BOARD	OF15103010	X201		4822 242 72527	SERAMIC VIB.,CST4.00MGW CERALOCK	FQ04004030
C102	/02	4822 121 42754	P101-CAPACITORS	OF15103010					
R101		4822 052 10479	P101-RESISTORS	GG05470160	C271		4822 124 23563	P271-IR SENSOR & IND. CIRCUIT BOARD	EG47601050
R102		4822 052 10479	47Ω ±5% 1/6W	GG05470160	C272		4822 126 12496	P271-CAPACITORS	DD38103010
R103		5322 116 55263	820Ω ±5% 1W	GA05821010	C273		4822 124 23563	ELECT.,47μF 10V	EG47601050
J101	FN./02G	4822 267 31692	P101-MISCELLANEOUS	YJ01003880	R271		4822 052 10101	P271-RESISTOR	GG05101160
J101	/02B	4822 267 31692	H.P. JACK HLJ0540-01-430	YJ01003870	R***			P271-RESISTORS (COMMON)	
S101		4822 273 10337	ROTARY SW. SRSBU14N-F2020	SR02040260				CARBON FILM FIXED RES. ±5% 1/6W : R272-R280	
C201			P201-μ-COM CIRCUIT BOARD		D271			P271-SEMICONDUCTORS	
C217		4822 121 42754	P201-CAPACITORS	OF15103010	D277		4822 130 80326	L.E.D.,LT3D8B RED 30	HI10062320
C218		4822 124 41534	FILM,0.01μF ±5% 50V	OA10602520	D278		4822 130 32362	DIODE,1SS176 MA165 1SS254 30V 0.1A	HD20002000
C219		4822 122 40617	ELECT.,10μF M 50V RA-2	OA10602520	Q271		4822 209 16735	PHOTO UNIT,PNA4655M00HB IR SENSOR	HW10006020
C220		4822 124 41534	ELECT.,10μF M 25V RA-2	OA10602520	Q272		4822 130 60107	TRS.,2SA1048 Y OR GR	HT11048280
C221		4822 121 42754	FILM,0.01μF ±5% 50V	OF15103010	Q273		4822 130 60839	TRS.,2SC2458 Y OR GR	HT32458280
C222		4822 124 41534	ELECT.,10μF M 25V RA-2	OA10602520	S271		4822 276 14018	P271-MISCELLANEOUS	SP02012270
C223		4822 122 40617	CER.,0.1μF +80%-20% 50V	DD38104010	S281		4822 273 10363	P281-INPUT SELECTOR CIRCUIT BOARD	SR01120090
C224		4822 124 90406	BIG ELECT.,FMOH223ZTP16 SUPER CAP.	EX22300530				ROTARY SW. SRRSIC-F12-1 L30	
C225		4822 122 40617	CER.,0.1μF +80%-20% 50V	DD38104010	R291			P291-REC SELECTOR CIRCUIT BOARD	GD05102160
C226		4822 124 41534	ELECT.,10μF M 25V RA-2	OA10602520	S291		4822 273 10303	ROTARY SW.,SRRM 1-8 L25	SR01080080
C227		4822 124 41534	ELECT.,10μF M 25V RA-2	OA10602520	C301			P301-INPUT RCA PINJACK CIRCUIT BOARD	OA10505020
C228		4822 122 40617	CER.,0.1μF +80%-20% 50V	DD38104010	C315		4822 124 41543	P301-MISCELLANEOUS	OA10505020
C229		4822 121 42754	FILM,0.01μF ±5% 50V	OF15103010	C318				
C230		4822 124 41534	ELECT.,10μF M 25V RA-2	OA10602520	C331		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
C231					C333				
C239		4822 121 42754	FILM,0.01μF ±5% 50V	OF15103010	C348	/02	4822 121 10792	FILM,220pF ±5% 100V	OF15221540
R241		4822 052 10228	P201-RESISTORS	GG05022160	R321			P301-RESISTORS	GG05100160
R249		4822 052 10479	2.2Ω ±5% 1/6W	GG05470160	R335		4822 052 10109	10Ω ±5% 1/6W	
R259		4822 052 10228	47Ω ±5% 1/6W	GG05022160	R***			P301-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RES. ±5% 1/6W : R201-R240 R242-R248 R250-R257					CARBON FILM FIXED RES. ±5% 1/6W : R301-R320	
D201			P201-SEMICONDUCTORS		Q301		4822 130 61227	P301-SEMICONDUCTORS	BA10001000
D205		4822 130 32362	DIODE,1SS176 MA165 1SS254 30V 0.1A	HD20002000	Q315				
Q201		4822 130 60588	DIG.TRS.,DTC114ES UN4211	BA20001000					
Q202									
Q216		4822 130 60588	DIG.TRS.,DTC114ES UN4211 10k 10k	BA20001000					
Q217		4822 209 32553	IC,LC78212	HC10309030					
Q218		4822 209 16894	MICROPROCESSOR, 42PIN TMP47C200BN-H384 4BIT 2K	HU289JT000					
Q219		4822 209 73287	IC,LB1630	HC10235030					
Q220		4822 130 60839	TRS.,2SC2458 Y OR GR	HT32458280					
Q221		4822 130 60839	TRS.,2SC2458 Y OR GR	HT32458280					
Q222		4822 130 60839	TRS.,2SC2458 Y OR GR	HT32458280					
L201			P201-MISCELLANEOUS		Q301				
L216		4822 158 60605	FERRIT BEADS B-01-RT	FC90050060	Q315				

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MUJ)	POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MUJ)
J301		4822 290 81598	P301-MISCELLANEOUS	YT02021130	C465		4822 126 12496	CER.,0.01μF +80%-20% 50V	DD38103010
J302			TERMINAL,2P RCA	YT02040970	C466		4822 126 12496	CER.,0.01μF +80%-20% 50V	DD38103010
J304		4822 290 81599	TERMINAL,4P RCA		C467		4822 124 41543	ELECT.,1μF M 50V RA-2	OA10505020
L301			YK021-3255 GOLD		R401		4822 111 20407	P401-RESISTORS	NR01101140
L315		4822 280 20501	RELAY,MR62-24SR 24V	LY20240410	R402		4822 111 20407	100.0Ω ±1% 1/4W ERDPS2F	NR01101140
C371		4822 126 12496	P371-METER CIRCUIT BOARD	DD38103010	R403			33Ω ±1% 1/4W ERD	NR01330140
M371		4822 344 14034	D.C.METER,MG-28	IM11030C30	R404			33Ω ±1% 1/4W ERD	NR01330140
M372		4822 134 40925	LAMP,8V 100mA BLUE	IN10080680	R405		4822 111 20428	47kΩ ±1% 1/4W ERD	NR01473140
R391	/02	4822 052 10479	P391-RC-5 CIRCUIT BOARD [02 VERSION]	GG0547C160	R406		4822 111 20428	47kΩ ±1% 1/4W ERD	NR01473140
J391	/02	4822 267 41009	TERMINAL,2P RCA	YT02020390	R407			120Ω ±1% 1/4W ERD	NR01121140
C401		4822 121 10794	P401-PHONO AMP. CIRCUIT BOARD		R408			120Ω ±1% 1/4W ERD	NR01121140
C402		4822 121 10794	FILM,1000pF ±5% 100V	OF55102530	R409		4822 111 20409	12Ω ±1% 1/4W ERD	NR01120140
C403		4822 121 10793	FILM,100pF ±5% 100V	OF55101530	R410		4822 111 20409	12Ω ±1% 1/4W ERD	NR01120140
C404		4822 121 10793	FILM,100pF ±5% 100V	OF55101530	R415		4822 111 20418	82kΩ ±1% 1/4W ERD	NR01823140
C405	/02	4822 121 10793	FILM,100pF ±5% 100V	OF55101530	R416		4822 111 20418	82kΩ ±1% 1/4W ERD	NR01823140
C406	/02	4822 121 10793	FILM,100pF ±5% 100V	OF55101530	R417		4822 111 20417	6.8kΩ ±1% 1/4W ERD	NR01682140
C407		4822 124 22238	ELECT.,100μF 25V ARA	OA10702550	R418		4822 111 20417	6.8kΩ ±1% 1/4W ERD	NR01682140
C408		4822 124 22238	ELECT.,100μF 25V ARA	OA10702550	R421		4822 111 20415	27kΩ ±1% 1/4W ERD	NR01273140
C409		4822 121 70324	FILM,0.039μF ±5% CQ2P2A	OF55393530	R422		4822 111 20415	27kΩ ±1% 1/4W ERD	NR01273140
C410		4822 121 70324	FILM,0.039μF ±5% CQ2P2A	OF55393530	R423		4822 111 20416	330Ω ±1% 1/4W ERD	NR01331140
C411		4822 121 70321	FILM,10μF ±5% 100V	OF55103530	R424		4822 111 20416	330Ω ±1% 1/4W ERD	NR01331140
C412		4822 121 70321	FILM,0.01μF ±5% 100V	OF55103530	▲ R425		4822 052 10479	47Ω ±5% 1/6W	GG05470160
C413		4822 121 10794	FILM,1000pF ±5% 100V	OF55102530	▲ R426		4822 052 10479	47Ω ±5% 1/6W	GG05470160
C414		4822 121 10794	FILM,1000pF ±5% 100V	OF55102530	▲ R427		4822 052 10151	150Ω ±5% 1/6W	GG05151160
C415		4822 121 70323	FILM,3300pF ±5% 100V	OF55332530	▲ R428		4822 052 10151	150Ω ±5% 1/6W	GG05151160
C416		4822 121 70323	FILM,3300pF ±5% 100V	OF55332530	R451				
C417		4822 124 80578	ELECT.,22μF 25V ARA	OA22602550	R454		4822 111 20419	10kΩ ±1% 1/4W ERD	NR01103140
C418		4822 124 80578	ELECT.,22μF 25V ARA	OA22602550	R455				
C419		4822 121 70323	FILM,3300pF ±5% 100V	OF55332530	R458		4822 111 20416	330Ω ±1% 1/4W ERD	NR01331140
C420		4822 121 70323	FILM,3300pF ±5% 100V	OF55332530	R459				
C421					R466		4822 111 20414	2.2kΩ ±1% 1/4W ERD	NR01222140
C424		4822 124 90051	ELECT.,220μF 25V ARA	OA22702550	R467		4822 111 20415	27kΩ ±1% 1/4W ERD	NR01273140
C425					R468		4822 111 20415	27kΩ ±1% 1/4W ERD	NR01273140
C428		4822 121 10794	ELECT.,1000μF M 16V ARA	OA10801650	R469		4822 111 20413	220Ω ±1% 1/4W ERD	NR01221140
C429	/02	4822 121 10794	FILM,100pF ±5% 100V	OF55101530	R470		4822 111 20413	220Ω ±1% 1/4W ERD	NR01221140
C430	/02	4822 121 10794	FILM,100pF ±5% 100V	OF55101530	▲ R471		4822 052 10479	47Ω ±5% 1/6W	GG05470160
C431		4822 126 12496	CER.,0.01μF +80%-20% 50V	DD38103010	▲ R472		4822 052 10479	47Ω ±5% 1/6W	GG05470160
C432		4822 126 12496	CER.,0.01μF +80%-20% 50V	DD38103010	R473		4822 052 10109	10Ω ±5% 1/6W	GG05100160
C433		4822 124 12275	FILM,0.01μF ±5% 100V APSV	OF15103540	R***				
C434		4822 126 12496	CER.,0.01μF +80%-20% 50V	DD38103010	D401		4822 130 32362	P401-RESISTORS (COMMON)	HD20002000
C451		4822 121 10794	FILM,1000pF ±5% 100V	OF55102530	D404			CARBON FILM FIXED RES. ±5% 1/6W : R411-R414 R419 R420	
C452		4822 121 10794	FILM,1000pF ±5% 100V	OF55102530	Q401		4822 209 31153	P401-SEMICONDUCTORS	IC,NEW HDAM
C453					Q402		4822 209 16926	UNIT & H-IC,NEW HDAM	KH269J1010
C456		4822 124 90051	ELECT.,220μF 25V ARA	OA22702550	Q403		4822 209 16926	IC,OPA2604AP	HC1008610
C457		4822 123 30089	MICA,22pF ±5% 500V FE	DF35220520	Q451		4822 209 16926	IC,OPA2604AP	HC1008610
C458		4822 123 30089	MICA,22pF ±5% 500V FE	DF35220520	Q452		4822 209 16926	IC,OPA2604AP	HC1008610
C459		4822 124 80578	ELECT.,22μF 25V ARA	OA22602550	Q453		4822 209 16926	IC,OPA2604AP	HC1008610
C460		4822 124 80578	ELECT.,22μF 25V ARA	OA22602550	Q454		4822 130 61227	DIG.TRS.,DTA114ES UN4111 10k 10k	BA10001000
C461		4822 121 10794	FILM,1000pF ±5% 100V	OF55102530	J401		4822 290 81598	P401-MISCELLANEOUS	YT02021130
C462		4822 121 10794	FILM,1000pF ±5% 100V	OF55102530	L401	/02	4822 158 60606	TERMINAL,2P RCA	LC12030050
C463		4822 126 12496	CER.,0.01μF +80%-20% 50V	DD38103010	L402	/02	4822 158 60606	CHOKE COIL, 20μH 5R200PN	LY20240410
C464		4822 126 12496	CER.,0.01μF +80%-20% 50V	DD38103010	L451		4822 280 20501	RELAY,MR62-24SR 24V	SP04010660

(VERS: VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, --:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MUJ)	POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MUJ)
			<b>P601-POWER AMP. L CIRCUIT BOARD</b>		D605		4822 130 80837	DIODE,HSS81TD 150V 150mA	HD20027010
			<b>P601-CAPACITORS</b>		D612				
C601		4822 121 10797	FILM.680pF ±5% 100V	OF55681530	D613		4822 130 80318	ZENER DIODE 6.8V 04A25 6-Y	HD30681000
C602		4822 121 70322	FILM.0.1μF ±5% 100V	OF55104530					
C603		4822 124 22242	ELECT..470μF M 25V ARA	OA47702550	D614		4822 130 80318	ZENER DIODE 6.8V 04A25 6-Y	HD30681000
C604		4822 124 22242	ELECT..470μF M 25V ARA	OA47702550					
C605		4822 123 30088	MICA.10pF D 250WV	DF31100520	D615		4822 130 80837	DIODE,HSS81TD 150V 150mA	HD20027010
C606		4822 121 10797	FILM.680pF ±5% 100V	OF55681530	D616		4822 130 80837	DIODE,HSS81TD 150V 150mA	HD20027010
C607		4822 124 23562	ELECT..10μF M 100V	OA10610020	D617		4822 130 80837	DIODE,HSS81TD 150V 150mA	HD20027010
C608		4822 121 10796	FILM.220pF ±5% 100V	OF55221530	Q601		4822 130 42949	UNIT & HIC NEW-DM	KH269J1010
C609		4822 121 70324	FILM.0.039μF ±5% 100V	OF55393530	Q603		4822 130 42949	TRS.25A970 GR OR BL	HT109702A0
C611		4822 124 80542	ELECT.10μF M 63V RBPA	EQ10606390	Q604		4822 130 42949	TRS.25C2240 GR OR BL	HT322402A0
▲ C613		4822 124 12278	ELECT.470μF M 80V AUDIO	EB47708060	Q605		4822 130 42949	TRS.25A970 GR OR BL	HT109702A0
▲ C614		4822 124 12278	ELECT.470μF M 80V AUDIO	EB47708060	Q606		4822 130 42949	TRS.25C2240 GR OR BL	HT322402A0
C615		4822 124 22273	ELECT..0.47μF M 50V RA-2	OA47405020	Q607		4822 130 42949	TRS.25C2705 O OR Y	HT327052A0
					Q608		4822 130 42999	TRS.25A1145 O OR Y	HT111452A0
					Q609		4822 130 42999	TRS.25A1145 O OR Y	HT111452A0
					Q610		4822 130 42983	TRS.25C2705 O OR Y	HT327052A0
					Q611		4822 130 42983	TRS.25C2705 O OR Y	HT327052A0
					▲ Q612		4822 130 42999	TRS.25A1145 O OR Y	HT111452A0
					▲ Q613		4822 130 42999	TRS.25C4793 O OR Y	HT347932A0
					▲ Q614		4822 130 42999	TRS.25A1837 O OR Y	HT118372A0
					▲ Q615		4822 130 43303	TRS.25C2922 Y OR P	HT329222B0
					▲ Q616		4822 130 43015	TRS.25A1216 Y OR P	HT112162B0
					Q617		4822 130 43293	TRS.25C2240 GR OR BL	HT322402A0
					Q618		4822 130 42949	TRS.25A970 GR OR BL	HT109702A0

